DEPOSITION PROCESSES USING GROUP 8 (VIII) METALLOCENE PRECURSORS

ABSTRACT OF THE DISCLOSURE

Disclosed herein is a process for producing a film, coating or powder employing a metallocene or metallocene-like precursor having the general formula CpMCp', where M is a metal selected from the group consisting of Ru, Os and Fe; Cp is a first substituted cyclopentadienyl or cyclopentadienyl-like, e.g., indenyl, moiety that includes at least one substituent group D_1, where D_1 is X; $C_{a1}H_{b1}X_{c1}$; $C_{a2}H_{b2}X_{c2}(C=O)C_{a1}H_{b1}X_{c1}$; $C_{a2}H_{b2}X_{c2}OC_{a1}H_{b1}X_{c1}$; $C_{a2}H_{b2}X_{c2}(C=O)OC_{a1}H_{b1}X_{c1}$; or $C_{a2}H_{b2}X_{c2}O(C=O)C_{a1}H_{b1}X_{c1}$; and Cp' is a second substituted cyclopentadienyl or cyclopentadienyl-like, e.g., indenyl, moiety that includes at least one substituent group D_1', where D1' is X; $C_{a1}H_{b1}X_{c1}$; $C_{a2}H_{b2}X_{c2}(C=O)C_{a1}H_{b1}X_{c1}$; $C_{a2}H_{b2}X_{c2}OC_{a1}H_{b1}X_{c1}$; $C_{a2}H_{b2}X_{c2}(C=O)OC_{a1}H_{b1}X_{c1}$; or $C_{a2}H_{b2}X_{c2}O(C=O)C_{a1}H_{b1}X_{c1}$. D_1 and D_1' are different from one another. X is a halogen atom or NO_2; a1 is an integer between 1 to 8; b1 is an integer between 0 and 2(a1)+1-c1; c1 is an integer between 0 and 2(a1)+1 – b1; b1 + c1 is at least 1; a2 is an integer between 0 and 8; b2 is an integer between 0 and 2(a2) + 1 – c2; andc2 is an integer between 0 and 2(a2) + 1 – b2. The process can be used in manufacturing or processing electronic devices.